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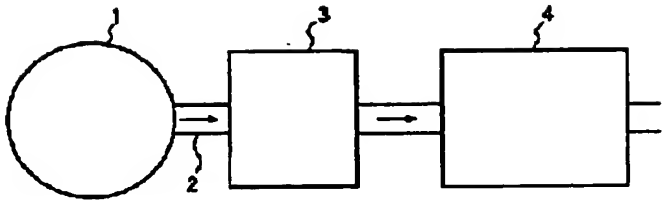
TITLE : EXHAUST GAS CLEANING SYSTEM



ABSTRACT : PROBLEM TO BE SOLVED: To considerably reduce harmful components discharged from auto exhaust gas, etc., into the air by disposing a gaseous CO_2 absorption material that absorbs CO_2 at a specified temp. or above in an exhaust pipe between a burner using a hydrocarbon component as fuel and an exhaust gas cleaning catalyst through which the exhaust gas of the burner passes.

SOLUTION: A gaseous CO_2 absorption material 3 that absorbs CO_2 at ≥400°C is connected to a burner 1 using a hydrocarbon component as fuel by way of an exhaust pipe 2 and an exhaust gas cleaning catalyst 4 is disposed in the exhaust pipe 2 behind the absorption material 3. As the absorption material 3 which has properties to absorb CO_2 at ≥400°C is cited, e.g. a conjugated oxide of lithium (a compd. of lithium with an inorg. oxide). The absorption material 3 is used in a cartridge exchange system, detached and treated after the lapse of a certain period of time or a function to regenerate the absorption material 3 is provided to a car body and CO_2 generated at the time of regeneration is recovered.

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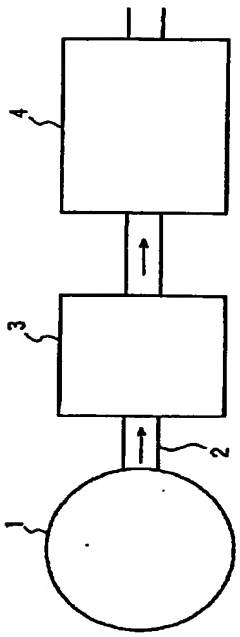
(54)【発明の名称】　排ガス浄化システム

(57)【要約】

【課題】　自動車等の排気ガスから大気中に放出される有害成分を大幅に低減することが可能な排気ガス浄化システムを提供する。

【解決手段】　炭化水素系成分を燃料とする燃焼器と、前記燃焼器の排気ガスが流通する排気管に配置された排ガス浄化触媒とを具備し、CO_2を４００℃以上の温度で吸収する炭酸ガス吸収材は、前記燃焼器と前記浄化触媒の間の前記排気管に配置されることを特徴とする。



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【特許請求の範囲】
【請求項１】　炭化水素系成分を燃料とする燃焼器と、前記燃焼器の排気ガスが流通する排気管に配置された排ガス浄化触媒と、
前記燃焼器と前記浄化触媒の間の前記排気管に配置されるＣＯ$_2$を４００℃以上の温度で吸収する炭酸ガス吸収材とを具備したことを特徴とする排気ガス浄化システム。
【請求項２】　前記炭酸ガス吸収材は、リチウムの複合酸化物であることを特徴とする請求項１記載の排気ガス浄化システム。
【発明の詳細な説明】
【０００１】
【発明が属する技術分野】本発明は、自動車の排気ガスの浄化や、炭化水素系成分を燃料とするエネルギープラントや化学プラントの排気ガスの浄化に応用される排気ガス浄化システムに関する。
【０００２】
【従来の技術】例えば、自動車の排気ガスに含有される有害物質である一酸化炭素（ＣＯ）、窒素酸化物（ＮＯ$_x$）、炭化水素（ＨＣ）は、空気比（空気と燃料の混合比）の最適化と三元触媒と称される排気ガス浄化触媒（Ｒｕ，Ｐｔなどの貴金属）の作用により低減される。
【０００３】前記ＣＯ，ＨＣは、次式の反応にしたがって炭酸ガス（ＣＯ$_2$）と水素（Ｈ$_2$）、炭酸ガス（ＣＯ$_2$）と水（Ｈ$_2$Ｏ）を生成する。
ＣＯ＋Ｈ$_2$Ｏ→ＣＯ$_2$＋Ｈ$_2$
ＨＣ＋Ｏ$_2$→ＣＯ$_2$＋Ｈ$_2$Ｏ
しかしながら、前記ＣＯ，ＨＣの反応においてＣＯ$_2$が多く存在すると、ＣＯの酸化等が円滑に進行しないことが予想される。また、ＣＯの酸化により生成したＣＯ$_2$は地球温暖化防止の観点からも大気中に放出されることは好ましくない。
【０００４】
【発明が解決しようとする課題】本発明は、自動車等の排気ガスから大気中に放出される有害成分を大幅に低減することが可能な排気ガス浄化システムを提供しようとするものである。
【０００５】
【課題を解決するための手段】本発明に係わる排気ガス浄化システムは、炭化水素系成分を燃料とする燃焼器と、前記燃焼器の排気ガスが流通する排気管に配置された排ガス浄化触媒と、前記燃焼器と前記浄化触媒の間の前記排気管に配置されるＣＯ$_2$を４００℃以上の温度で吸収する炭酸ガス吸収材とを具備したことを特徴とするものである。前記炭酸ガス吸収材は、リチウムの複合酸化物であることが好ましい。
【０００６】
【発明の実施の形態】以下、本発明に係わる排気ガス浄化システムを図面を参照して詳細に説明する。図１は、

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本発明の排気ガス浄化システムを示す概略図である。図中の１は、炭化水素系成分を燃料とする燃焼器である。排気管２は、前記燃焼器１に連結され、その排気ガスが流通する。ＣＯ$_2$を４００℃以上の温度で吸収する炭酸ガス吸収材３は、前記排気管２に配置され、さらに排ガス浄化触媒４は前記炭酸ガス吸収材３後段の前記排気管２に配置されている。
【０００７】前記燃焼器１の燃料は、炭化水素系成分であれば特に限定されないが、具体的にはガソリン、メタノールが用いられる。前記燃焼器としては、例えばガソリンエンジン、ディーゼルエンジン等を挙げることができる。
【０００８】前記は排ガス浄化触媒としては、例えばＲｕ，Ｐｔ，Ｐｄなどの貴金属、Ｎｉ，Ｆｅ，Ｃｏ等の酸化物等を挙げることかできる。前記炭酸ガス吸収材は、ＣＯ$_2$を４００℃以上の温度で吸収する性質を有する材料である。具体的には、リチウムの複合酸化物（リチウムと無機酸化物の化合物）が挙げられる。この無機酸化物としては、例えばＺｒＯ$_2$，Ａｌ$_2$Ｏ$_3$，ＭｇＯ，ＣａＯ，Ｆｅ$_2$Ｏ$_3$，ＣｅＯ$_2$，ＴｉＯ$_2$，ＮｉＯ等を挙げることができる。
【０００９】前記リチウムの複合酸化物、例えばリチウムジルコネート；Ｌｉ$_2$ＺｒＯ$_3$は、４００℃以上の温度下でリチウムがＣＯ$_2$と反応してＬｉ$_2$ＣＯ$_3$とＺｒＯ$_2$を生成する、ＣＯ$_2$吸収反応を生じる。また、前記リチウムの複合酸化物、例えばリチウムジルコネート；Ｌｉ$_2$ＺｒＯ$_3$はＣＯ$_2$を吸収した温度域より高温領域でＬｉ$_2$ＣＯ$_3$とＺｒＯ$_2$とから再びリチウムの複合酸化物（Ｌｉ$_2$ＺｒＯ$_3$）に戻る、ＣＯ$_2$放出反応を起こす。
【００１０】前記ＣＯ$_2$の吸収・放出の温度領域は、リチウムの複合酸化物の種類により異なる。例えば、ＬｉとＺｒＯ$_2$との複合酸化物であるＬｉ$_2$ＺｒＯ$_3$はＣＯ$_2$吸収反応が４００～５８０℃で起こり、ＣＯ$_2$放出反応は６００℃以上の温度で起こる。
【００１１】すなわち、前記リチウムの複合酸化物からなる炭酸ガス吸収材はＣＯ$_2$の吸収温度で一定期間使用した後、ＣＯ2 の放出反応が生じて再生されることが必要である。このような形態の炭酸ガス吸収材を実現するには、例えば炭酸ガス吸収材をカートリッジ交換方式とし、一定期間経過後に取り外して処理する方法、または自動車の車体に炭酸ガス吸収材の再生機能を付加し、再生時に発生するＣＯ$_2$を回収する方法が採用される。
【００１２】前記炭酸ガス吸収材の形態は、例えば円柱形状のペレットとし、これを容器内に充填する形態またはハニカム構造体が挙げられる。前記炭酸ガス吸収材の量は、排気ガス量に応じて調節される。例えば、炭酸ガス吸収材をカートリッジ方式にする場合には、炭酸ガス吸収材を予めカートリッジ内に交換時まで所定量のＣＯ$_2$を吸収する能力が維持される量を充填する。具体的に

は、排気ガス量が３Ｌ／ｍｉｎで、２４時間後にカートリッジを交換する場合、炭酸ガス吸収材の量を約２．２ｋｇ（Li_2ZrO_3の場合）にすることが好ましい。

【００１３】前記炭酸ガス吸収材は、４００℃以上の温度にする観点から前述した図１に示す燃焼器１の近傍に配置することが好ましい。以上説明した本発明の排気ガス浄化システムは、炭化水素系成分を燃料とする燃焼器と、前記燃焼器の排気ガスが流通する排気管に配置された排ガス浄化触媒とを具備し、前記燃焼器と前記浄化触媒の間の前記排気管にCO_2を４００℃以上の温度で吸収する炭酸ガス吸収材を配置した構造を有するため、排気ガス中のＣＯ，ＨＣ，NO_x等の有害物質を大幅に低減することができる。

【００１４】すなわち、ガソリンエンジンで空燃比を最適化して運転した燃焼排ガスの組成はＣＯ　0.3％，ＮＯ　0.05～0.15％，H_2O　約13％，H_2　0.1～0.3％，ＨＣ　０．03～0.08％，SO_2　約0.002％，O_2　0.2～0.5％，CO_2　約12％、残りN_2であり、CO_2が全体の約12％を占めている。また、排気ガス中の成分は触媒の存在下で次のような（１）～（３）等の反応がなされる。

【００１５】

$CO+H_2O \rightarrow CO_2+H_2$　…（１）

$HC+O_2 \rightarrow CO_2+H_2O$　…（２）

$2NO+2CO \rightarrow 2CO_2+N_2$　…（３）

このような燃焼排気ガスの成分組成および触媒の存在下でのＣＯ，ＨＣの反応、特に（１）式の反応において、反応生成物であるCO_2をトラップすることにより右側の反応が促進される。前述した図１に示すように燃焼排ガスの流路である排気管２の排気ガス浄化触媒４の前段に炭酸ガス吸収材３を配置することにより、前記燃焼排気ガスの成分組成中に１２％占めるCO_2を吸収して低減できるために、この吸収材３の後段の排気ガス浄化触媒４に導入される排気ガスのCO_2の分圧を低減できる。その結果、前記（１）式の右側への反応が促進、つまりＣＯのCO_2への生成が促進、されるため、自動車から排出される排気ガス中のＣＯ量を大幅に低減することができる。また、前記（２）、（３）式からＨＣ，NO_xの量も低減することができる。従って、本発明によれば排気ガス中のＣＯ，ＨＣ，NO_x等の有害物質を大幅に低減することができる。

【００１６】

【実施例】以下、本発明の好ましい実施例を詳細に説明する。

（実施例１）まず、Li_2ZrO_3からなる直径１０mmの円柱状ペレット約３ｋｇが充填されたカートリッジを図１に示す炭酸ガス吸収材とし組み込み、かつ排気ガス浄化触媒４としてＲｕ－Ｐｔ－Ｐｄからなるものを用いた。

【００１７】燃焼器１からガソリンエンジンの燃焼排気ガス組成を模擬した下記表１に示すガス（４００～５００℃に予め加熱）を排気管２を通して３Ｌ／ｍｉｎの流量で前記炭酸ガス吸収材３に導入し、さらに排気ガス浄化触媒４を流通させ、２４時間経過後における前記触媒の出口側のガス組成を分析した。その結果を下記表２に示す。

【００１８】（実施例２）まず、直径２００mm、長さ１００mmで１cm³当たり５０個のセルを有するコーディエライト製円柱状ハニカム構造基材にLi_2ZrO_3，を含むスラリーを固形分換算で４．５ｋｇコートし、大気中、８００℃で焼成し、えられた構造物を前述した図１に示す炭酸ガス吸収材とし組み込み、かつ排気ガス浄化触媒４としてＲｕ－Ｐｔ－Ｐｄからなるものを用いた。

【００１９】燃焼器１からガソリンエンジンの燃焼排気ガス組成を模擬した下記表１に示すガス（４００～５００℃に予め加熱）を排気管２を通して６Ｌ／ｍｉｎの流量で前記炭酸ガス吸収材３に導入し、さらに排気ガス浄化触媒４を流通させ、２４時間経過後における前記触媒の出口側のガス組成を分析した。その結果を下記表２に示す。

【００２０】（実施例３）実施例１においてCO_2を吸収した後の炭酸ガス吸収材に６５０℃の空気を流通させた後、再び、実施例１と同様に燃焼器１からガソリンエンジンの燃焼排気ガス組成を模擬した下記表１に示すガス（４００～５００℃に予め加熱）を排気管２を通して３Ｌ／ｍｉｎの流量で前記炭酸ガス吸収材３に導入し、さらに排気ガス浄化触媒４を流通させ、２４時間経過後における前記触媒の出口側のガス組成を分析した。その結果を下記表２に示す。

【００２１】（比較例１）排気管にＲｕ－Ｐｔ－Ｐｄからなる排気ガス浄化触媒のみを配置した以外、実施例１と同様にガソリンエンジンの燃焼排気ガス組成を模擬した下記表１に示すガス（４００～５００℃に予め加熱）を排気管を通して３Ｌ／ｍｉｎの流量で排気ガス浄化触媒を流通させ、２４時間経過後における前記触媒の出口側のガス組成を分析した。その結果を下記表２に示す。

【００２２】

【表１】

ガス成分	濃度（vol%）
C_3H_8（HC）	０．０３
NO	０．０７
CO	０．５
H_2O	１３
CO_2	１２
O_2	０．４
N_2	バランス

【００２３】

【表２】

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	CO_2 (vol%)	CO (vol%)	HC (vol%)	NO (vol%)
投入ガス	１２	０．５	０．０３	０．０７
実施例１	３	０．１	０．０１	０．０４
実施例２	２	０．０５	０．０１	０．０４
実施例３	３	０．０９	０．０１	０．０４５
比較例１	１２．３	０．３	０．０２	０．０６

【００２４】前記表２から明らかなように炭酸ガス吸収材を排気ガス浄化触媒の前段に配置した実施例１、２の浄化システムは、排気ガス浄化触媒のみを配置した比較例１の浄化システムに比べてＣＯ，ＨＣ，NO_xの有害物質を効果的に低減できることがわかる。

【００２５】また、実施例３に示すようにCO_2を吸収した後、再生した炭酸ガス吸収材を用いた場合でも、実施例１と同様、ＣＯ，ＨＣ，NO_xの有害物質を効果的に低減できることがわかる。

【００２６】

【発明の効果】以上詳述したように本発明に係わる排気ガス浄化システムは、排気ガス中のＣＯ，ＨＣ，NO_x＊の有害物質を効果的に低減できるため、自動車、エネルギープラント、化学プラント等に有効に適用することができる。

【図面の簡単な説明】

【図１】本発明に係わる排気ガス浄化システムを示す概略図。

【符号の説明】

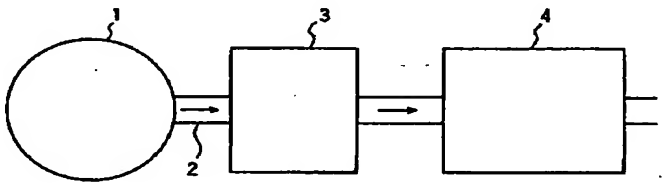
１…燃焼器、

２…排気管、

３…炭酸ガス吸収材、

４…排気ガス浄化触媒。

【図１】



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(72)Inventor : OHASHI TOSHIYUKI
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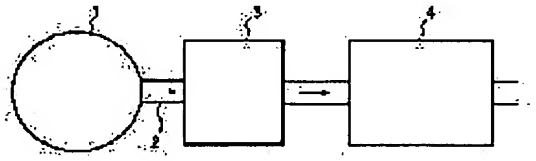
(54) EXHAUST GAS CLEANING SYSTEM

(57)Abstract:
PROBLEM TO BE SOLVED: To considerably reduce harmful components discharged from auto exhaust gas, etc., into the air by disposing a gaseous CO2 absorption material that absorbs CO2 at a specified temp. or above in an exhaust pipe between a burner using a hydrocarbon component as fuel and an exhaust gas cleaning catalyst through which the exhaust gas of the burner passes.
SOLUTION: A gaseous CO2 absorption material 3 that absorbs CO2 at ≥400°C is connected to a burner 1 using a hydrocarbon component as fuel by way of an exhaust pipe 2 and an exhaust gas cleaning catalyst 4 is disposed in the exhaust pipe 2 behind the absorption material 3. As the absorption material 3 which has properties to absorb CO2 at ≥400°C is cited, e.g. a conjugated oxide of lithium (a compd. of lithium with an inorg. oxide). The absorption material 3 is used in a cartridge exchange system, detached and treated after the lapse of a certain period of time or a function to regenerate the absorption material 3 is provided to a car body and CO2 generated at the time of regeneration is recovered.



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CLAIMS

[Claim(s)]
[Claim 1] CO2 arranged at said exhaust pipe between the emission-gas-purification catalyst arranged at the combustor which uses a hydrocarbon system component as a fuel, and the exhaust pipe with which the exhaust gas of said combustor circulates, and said combustor and said purification catalyst Exhaust gas purification system characterized by providing the carbon-dioxide-gas absorber absorbed at the temperature of 400 degrees C or more.
[Claim 2] Said carbon-dioxide-gas absorber is an exhaust gas purification system according to claim 1 characterized by being the multiple oxide of a lithium.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the exhaust gas purification system applied to purification of the exhaust gas of purification of the exhaust gas of an automobile, the energy plant which uses a hydrocarbon system component as a fuel, or a chemical processing plant.
[0002]
[Description of the Prior Art] For example, the carbon monoxide (CO) which is the harmful matter contained in the exhaust gas of an automobile, nitrogen oxides (NOx), and a hydrocarbon (HC) are reduced according to an operation of the exhaust gas purification catalyst (noble metals, such as Ru and Pt) called optimization and the three way component catalyst of an excess air ratio (mixing ratio of air and a fuel).
[0003] Said CO and HC generate carbon dioxide gas (CO2), hydrogen (H2) and carbon dioxide gas (CO2), and water (H2 O) according to the reaction of a degree type.
It sets for said reaction of CO and HC, and is [CO+H2 O->CO2+H2 HC+O2 ->CO2+H2 O, however] CO2. If it exists mostly, it will be expected that oxidation of CO etc. does not advance smoothly. Moreover, CO2 generated by oxidation of CO It is not desirable to be emitted into atmospheric air also from a viewpoint of global warming prevention.
[0004]
[Problem(s) to be Solved by the Invention] This invention tends to offer the exhaust gas purification system which can reduce sharply the injurious ingredient emitted into atmospheric air from exhaust gas, such as an automobile.
[0005]
[Means for Solving the Problem] The exhaust gas purification system concerning this invention is CO2 arranged at said exhaust pipe between the emission-gas-purification catalyst arranged at the combustor which uses a hydrocarbon system component as a fuel, and the exhaust pipe with which the exhaust gas of said combustor circulates, and said combustor and said purification catalyst. It is characterized by providing the carbon-dioxide-gas absorber absorbed at the temperature of 400 degrees C or more. As for said carbon-dioxide-gas absorber, it is desirable that it is the multiple oxide of a lithium.
[0006]
[Embodiment of the Invention] Hereafter, the exhaust gas purification system concerning this invention is explained to a detail with reference to a drawing. Drawing 1 is the schematic diagram showing the exhaust gas purification system of this invention. One in drawing is a combustor which uses a hydrocarbon system component as a fuel. An exhaust pipe 2 is connected with said combustor 1, and the exhaust gas circulates. CO2 The carbon-dioxide-gas absorber 3 absorbed at the temperature of 400 degrees C or more is arranged at said exhaust pipe 2, and the emission-gas-purification catalyst 4 is arranged further at said exhaust pipe 2 of said carbon-dioxide-gas absorber 3 latter part.
[0007] Although it will not be limited especially if the fuel of said combustor 1 is a hydrocarbon system component, a gasoline and a methanol are specifically used. As said combustor, a gasoline engine, a diesel power plant, etc. can be mentioned, for example.
[0008] The above is possible as an emission-gas-purification catalyst in mentioning oxides, such as noble metals, such as Ru, Pt, and Pd, and nickel, Fe, Co, etc., for example. Said carbon-dioxide-gas absorber is CO2. It is the ingredient which has the property absorbed at the temperature of 400 degrees C or more. Specifically,

the multiple oxide (compound of a lithium and an inorganic oxide) of a lithium is mentioned. As this inorganic oxide, ZrO2, aluminum 2O3, MgO, CaO and Fe 2O3, CeO2, TiO2, NiO, etc. can be mentioned, for example.
[0009] (The multiple oxide 3, for example, lithium zirconate;Li2 ZrO, of said lithium A lithium is CO2 under the temperature of 400 degrees C or more. It reacts and is Li2 CO3. CO2 which generates ZrO2 An absorption reaction is produced.) moreover, the multiple oxide 3 of said lithium, for example, lithium zirconate;Li2 ZrO, CO2 the absorbed temperature region -- an elevated-temperature field -- Li2 CO3 ZrO2 from -- CO2 which returns to the multiple oxide (Li2 ZrO3) of a lithium again Release reaction is caused.
[0010] Said CO2 The temperature field of absorption and emission changes with classes of multiple oxide of a lithium. For example, Li and ZrO2 Li2 ZrO3 which is a multiple oxide CO2 An absorption reaction occurs at 400-580 degrees C, and it is CO2. Release reaction occurs at the temperature of 600 degrees C or more.
[0011] That is, the carbon-dioxide-gas absorber which consists of a multiple oxide of said lithium is CO2. CO2 after carrying out fixed period use at absorption temperature It is required for release reaction to arise and to reproduce it. In order to realize the carbon-dioxide-gas absorber of such a gestalt, a carbon-dioxide-gas absorber is made into cartridge exchange system, the regenerative function of a carbon-dioxide-gas absorber is added to the car body of the approach of removing and processing after fixed period progress, or an automobile, and the method of collecting COs2 generated at the time of playback is adopted.
[0012] The gestalt of said carbon-dioxide-gas absorber is made into the pellet of the shape for example, of a cylindrical shape, and the gestalt or honeycomb structure object filled up with this in a container is mentioned. The amount of said carbon-dioxide-gas absorber is adjusted according to the amount of exhaust gas. For example, when making a carbon-dioxide-gas absorber into a cartridge type, it is a carbon-dioxide-gas absorber in a cartridge beforehand till exchange CO<SUB>2 of the specified quantity It is filled up with the amount in which the capacity to absorb is maintained. The amount of exhaust gas is 3 L/min, and when exchanging cartridges 24 hours after, specifically, it is desirable to set the amount of a carbon-dioxide-gas absorber to about 2.2kg (in the case of Li2 ZrO3).
[0013] As for said carbon-dioxide-gas absorber, it is desirable to arrange near the combustor 1 shown in drawing 1 mentioned above from a viewpoint made into the temperature of 400 degrees C or more. The exhaust gas purification system of this invention explained above The emission-gas-purification catalyst arranged at the combustor which uses a hydrocarbon system component as a fuel, and the exhaust pipe with which the exhaust gas of said combustor circulates is provided. said exhaust pipe between said combustors and said purification catalysts -- CO2 since it has the structure which has arranged the carbon-dioxide-gas absorber absorbed at the temperature of 400 degrees C or more -- CO, HC, and NOx in exhaust gas etc. -- harmful matter can be reduced sharply.
[0014] namely, the presentation of the combustion gas which optimized the air-fuel ratio and was operated by the gasoline engine -- CO about 0.002 %, O2 0.2 - 0.5 %, and CO [ ]2 -- about 12%, it is the remainder N2 and CO2 forms about 12% of the whole. 0.3 % and NO 0.05 - 0.15%, and H2 O About 13% and H2 0.1 - 0.3 % and HC 0.03 - 0.08%, and SO2 Moreover, as for the component in exhaust gas, reactions, such as following (1) - (3), are made under existence of a catalyst.
[0015]
CO+H2 O->CO2+H2 -- (1)
HC+O2 ->CO2+H2 O -- (2)
2NO(s)+2CO->2CO2+N2 -- (3)
CO under the component presentation of such combustion exhaust gas, and existence of a catalyst, the reaction of HC, and CO2 that is a resultant especially in the reaction of (1) type A right-hand side reaction is promoted by carrying out a trap. CO2 occupied 12% during the component presentation of said combustion exhaust gas by arranging the carbon-dioxide-gas absorber 3 in the preceding paragraph of the exhaust gas purification catalyst 4 of the exhaust pipe 2 which is the passage of a combustion gas as shown in drawing 1 mentioned above CO2 of the exhaust gas which absorbs, and is introduced into the exhaust gas purification catalyst 4 of the latter part of this absorber 3 since it can decrease A partial pressure can be reduced. Consequently, a reaction on the right-hand side of the aforementioned (1) formula is CO2 of promotion, i.e., CO. Since generation is promoted and carried out, the amount of COs in the exhaust gas discharged from an automobile can be reduced sharply. Moreover, the above (2) and (3) types to HC and NOx An amount can also be reduced. therefore -- according to this invention -- CO, HC, and NOx in exhaust gas etc. -- harmful matter can be

reduced sharply.
[0016]
[Example] Hereafter, the desirable example of this invention is explained to a detail.
(Example 1) first -- Li2 ZrO3 from -- what makes the cartridge with which cylindrical with a diameter of 10mm becoming pellet about 3kg was filled up the carbon-dioxide-gas absorber shown in drawing 1 , and incorporates it, and consists of Ru-Pt-Pd as an exhaust gas purification catalyst 4 was used.
[0017] The gas (it heats beforehand at 400-500 degrees C) shown in the following table 1 which simulated the combustion exhaust gas presentation of a gasoline engine from the combustor 1 was introduced into said carbon-dioxide-gas absorber 3 by the flow rate of 3 L/min through the exhaust pipe 2, the exhaust gas purification catalyst 4 was circulated further, and the gas presentation of the outlet side of said catalyst after 24-hour progress was analyzed. The result is shown in the following table 2.
[0018] (Example 2) It is 2 1cm at the diameter of 200mm, and die length of 100mm first. It is Li2 ZrO3 to the cylindrical honeycomb structure base material made from cordierite which has the cel of 50 hits. What carries out 4.5kg coat of the included slurry by solid content conversion, considers as the carbon-dioxide-gas absorber shown in drawing 1 which calcinated and mentioned the obtained structure above, and incorporates at 800 degrees C among atmospheric air, and consists of Ru-Pt-Pd as an exhaust gas purification catalyst 4 be used
[0019] The gas (it heats beforehand at 400-500 degrees C) shown in the following table 1 which simulated the combustion exhaust gas presentation of a gasoline engine from the combustor 1 was introduced into said carbon-dioxide-gas absorber 3 by the flow rate of 6 L/min through the exhaust pipe 2, the exhaust gas purification catalyst 4 was circulated further, and the gas presentation of the outlet side of said catalyst after 24-hour progress was analyzed. The result is shown in the following table 2.
[0020] (Example 3) It sets in the example 1 and is CO2. After circulating 650-degree C air to the carbon-dioxide-gas absorber after absorbing, The gas (it heats beforehand at 400-500 degrees C) shown in the following table 1 which simulated the combustion exhaust gas presentation of a gasoline engine is again introduced into said carbon-dioxide-gas absorber 3 by the flow rate of 3 L/min through an exhaust pipe 2 from a combustor 1 like an example 1. Furthermore the exhaust gas purification catalyst 4 was circulated, and the gas presentation of the outlet side of said catalyst after 24-hour progress was analyzed. The result is shown in the following table 2.
[0021] (Example 1 of a comparison) Except having arranged only the exhaust gas purification catalyst which becomes an exhaust pipe from Ru-Pt-Pd, the gas (it heats beforehand at 400-500 degrees C) shown in the following table 1 which simulated the combustion exhaust gas presentation of a gasoline engine like the example 1 circulated the exhaust gas purification catalyst by the flow rate of 3 L/min through the exhaust pipe, and the gas presentation of the outlet side of said catalyst after 24-hour progress was analyzed. The result is shown in the following table 2.
[0022]
[Table 1]

ガス成分	濃度 (vol%)
C_3H_6 (HC)	0.03
NO	0.07
CO	0.5
H_2O	13
CO_2	12
O_2	0.4
N_2	バランス

[0023]
[Table 2]

	CO_2 (vol%)	CO (vol%)	HC (vol%)	NO (vol%)
投入ガス	12	0.5	0.03	0.07
実施例1	3	0.1	0.01	0.04
実施例2	2	0.05	0.01	0.04
実施例3	3	0.09	0.01	0.045
比較例1	12.3	0.3	0.02	0.06

[0024] It compares with the purification system of the example 1 of a comparison which has arranged only the exhaust gas purification catalyst, and the purification system of the examples 1 and 2 which have arranged the carbon-dioxide-gas absorber in the preceding paragraph of an exhaust gas purification catalyst so that clearly from said table 2 is CO, HC, and NOx. It turns out that harmful matter can be reduced effectively.
[0025] Moreover, it is CO2 as shown in an example 3. They are CO, HC, and NOx like [even when the reproduced carbon-dioxide-gas absorber is used after absorbing] an example 1. It turns out that harmful matter can be reduced effectively.
[0026]
[Effect of the Invention] The exhaust gas purification system concerning [as explained in full detail above] this invention is CO, HC, and NOx in exhaust gas. Since harmful matter can be reduced effectively, it is applicable effective in an automobile, an energy plant, a chemical processing plant, etc.

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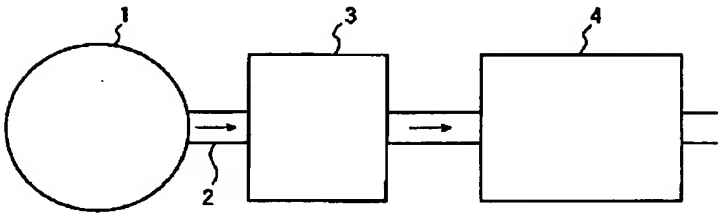
DRAWINGS

[Drawing 1]



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